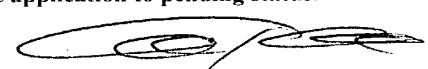


JC10 Rec'd PCT/PTO 11 MAR 2002

EXPRESS MAIL LABEL NO.: EL804519075US

DATE: March 11, 2002

FORM PTO 1390 (REV 11-2000)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER ALBIHN-426	
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371				U.S. APPLICATION NO. (If known, see 37 CFR 1.5) 10/070836	
INTERNATIONAL APPLICATION NO. PCT/SE00/01798		INTERNATIONAL FILING DATES 15 September 2000		PRIORITY DATE CLAIMED 16 September 1999	
TITLE OF INVENTION METHOD FOR MANUFACTURING AND APPLICATION OF HEATING ELEMENT FOR HEATING IN A VEHICLE					
APPLICANT(S) FOR DO/EO/US Peter Öberg					
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:					
<ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing 35 U.S.C. 371 3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371 (f)). The submission must include items (5), (6), (9) and (21) indicated below. 4. <input checked="" type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (PCT Article 31). 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371 (c)(2)) <ol style="list-style-type: none"> a. <input type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau). b. <input checked="" type="checkbox"/> has been communicated by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). 6. <input type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371 (c)(2)). <ol style="list-style-type: none"> a. <input type="checkbox"/> is attached hereto. b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4). 7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3)) <ol style="list-style-type: none"> a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau). b. <input type="checkbox"/> have been communicated by the International Bureau. c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input checked="" type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)). 9. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)). (unexecuted) 10. <input type="checkbox"/> An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)). 					
Items 11 to 20 below concern document(s) or information included:					
<ol style="list-style-type: none"> 11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. w/PTO-1449, 3 references 12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 13. <input type="checkbox"/> A FIRST preliminary amendment. 14. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. 15. <input type="checkbox"/> A substitute specification. 16. <input type="checkbox"/> A change of power of attorney and/or address letter. 17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825. 18. <input checked="" type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4). 19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4). 20. <input checked="" type="checkbox"/> Other items or information: Copy of International Preliminary Examination Report, Three (3) Sheets of Formal Drawings 					

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)		INTERNATIONAL APPLICATION NO.		ATTORNEY'S DOCKET NUMBER	
107070836		PCT/SE00/01798		ALBIHN-426	
21. <input checked="" type="checkbox"/> The following fees are submitted:				CALCULATIONS PTO USE ONLY	
BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) – (5)):					
<input checked="" type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$1040.00					
<input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$890.00					
<input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$740.00					
<input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$710.00					
<input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00					
ENTER APPROPRIATE BASIC FEE AMOUNT =				\$ 1,040.00	
Surcharge of \$ _____ for furnishing the oath or declaration later than				\$	
<input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).					
CLAIMS		NUMBER FILED	NUMBER EXTRA	RATE	
Total claims		6-20 =		x	\$ 0.00
Independent claims		1-3 =		x	\$ 0.00
MULTIPLE DEPENDENT CLAIM(s) (if applicable)				+	\$
TOTAL OF ABOVE CALCULATIONS =				\$ 1,040.00	
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				\$	
SUBTOTAL =				\$ 1,040.00	
Processing fee of \$ _____ for furnishing the English translation later than				\$	
<input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (f)). +					
TOTAL NATIONAL FEE =				\$ 1,040.00	
Fee for recording the enclosed assignment (37 CFR 1.21 (h)). Assignment must be accompanied by appropriate cover sheet (37 CFR 3.28, 3.31) (_____ per property).				+ \$	
TOTAL FEES ENCLOSED =				\$ 1,040.00	
				Amount to be Refunded: \$	
				Charged: \$	
a. <input type="checkbox"/> A check in the amount of \$ _____ to cover the above fees is enclosed.					
b. <input checked="" type="checkbox"/> Please charge my Deposit Account No. 12-1095 in the amount of \$ 1,040.00 to cover the above fees. A duplicate copy of this sheet is enclosed.					
c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required or credit any overpayment to my Deposit Account No. 12-1095. A duplicate copy of this sheet is enclosed.					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO:					
Arnold H. Krumholz LERNER, DAVID, LITTENBERG, KRUMHOLZ & MENTLIK, LLP 600 South Avenue West Westfield, New Jersey 07090 (908) 518-6304					
SIGNATURE: 					
NAME: Arnold H. Krumholz					
REGISTRATION NUMBER: 25,428					

TITLE

Method for manufacturing and application of heating element for heating in a vehicle

TECHNICAL FIELD

- 5 The present invention relates to a method for the production and application of a heating element for heating in vehicles, the heating element consisting of a heating wire defining at least one electric heating loop extending, in its operating position, in a predetermined pattern.

10 STATE OF THE ART

- It is previously known to produce heating elements for vehicles constructed from an electrically conducting heating loop that is applied onto a layer of material. Conventional heating elements are produced as separate products intended to allow rough handling, for example retrofitting into existing vehicle seats. The heating element
15 itself or the surrounding layers of material have had to function as a protective and carrying layer and have been given such a thickness that the heating elements have been noticeable to the user, due to stiffness as well as level differences in the seat around the edges of the element. Further, the increasing cost hunt on vehicle components has raised the demand for low manufacturing costs, with regard to material
20 as well as mounting costs.

- The object of the present invention is to provide a method for the production and application of a heating element for vehicles that solves the problems discussed above in such a way that for example vehicles can be equipped with heating elements at a very limited additional cost, enhancing the driving comfort.
25

DISCLOSURE OF INVENTION

Said object is achieved by means of a method characterised by the steps of:

- positioning the heating wire onto at least one side of a temporary carrier,
30 applying an adhesive over said carrier, at least over those areas where the heating wire is lying on the carrier, and over the heating wire, causing the heating wire to adhere to the surface of the carrier,
transporting the carrier with the heating wire to a final substrate, which the heating element is to be in close contact with,

pressing the heating wire against the substrate, heating the adhesive so as to make the wire adhere to the substrate, and

removing the carrier, so that the heating wire is released from the carrier and adheres to the substrate, to form the heating element for heating in the vehicle.

5

DESCRIPTION OF DRAWINGS

The invention will be described in further detail below, by way of an embodiment example, with reference to the enclosed drawings, of which

Fig. 1 is a top view, schematically illustrating the construction of one example of a heating element for use with the method according to the invention,

Fig. 2 shows a partially broken section, in an enlarged scale, of the heating element during a manufacturing stage,

Figs. 3-5 shows the corresponding section during an application stage, and

Fig. 6 is a cross-section through a vehicle seat with a heating element during the manufacturing process for the complete seat.

10 PREFERRED EMBODIMENT

The basic thought of the present invention is to provide a heating element with as simple a construction as possible, and to limit the handling stages and handling times of the element before fitting it into its final location, e.g. in a vehicle seat. Through this, the demands for easy handling of the mechanical construction of the

15 element before fitting can be lowered, thus reducing the additional cost of providing a vehicle with heating elements. The heating element is thus intended for heating in a vehicle, the power source commonly being the vehicle generator and battery. The heating element is generally intended for heating a vehicle seat, for example its bottom, backrest or headrest, in order not to chill the vehicle driver or passenger.

20 The heating element can also be arranged at other locations in the vehicle passenger compartment, for example in armrests panels, floor, door panels and roof, in order to maintain a warm and comfortable environment.

The active component of the heating element is a heating wire 1, normally consisting of metal or carbon fibre, or being spun from filaments with different properties. 25 The heating wire 1 is of the electrical resistance wire type, that is, a wire developing heat due to its high resistance when passed by an electric current, said current in

turn being obtained through two feeder lines 2, 3 that may or may not be insulated, connected to a (not shown) electric power source and, in a handling stage to be described in further detail below, applied through gluing onto a flexible carrier 4, as hinted by dot-dashed lines in Fig. 1. The carrier may be paper or a plastic film, and, preferably, as such electrically non-conductive.

The resistance wire is made with an appropriately adapted resistance for generating heat during application of a voltage across the terminal ends 5, 6 of the wire through the feeder lines 2, 3. The resistance is chosen by selecting the values of various parameters, such as the wire material resistivity, the wire diameter and its length. The wire may be uninsulated, or insulated with a conventional insulating material. The method according to the invention will now be described, with reference to Figs. 2, 3, 4, 5 and 6. The carrier 4 mentioned above, during rational production, is produced as a continuous web, uncoiled from a not shown roll and conveyed through a plant for producing heating elements. The transportation medium may consist of a not shown conveyor in the form of an endless conveyor belt, supporting the carrier and feeding it, either step-wise or continuously, through various stations in the manufacturing process. Initially, the heating wire 1 is applied, likewise being uncoiled from a not shown roll and applied into its predetermined pattern to form the active component of the heating element. The positioning is e.g. made by winding the wire around a number of fixed nails or pins defining a positioning fixture for the wire. This could be made either manually, or automatically by means of a robot. The "small" sinus shape, i.e. the serpentine shape superimposed upon the major serpentine shape, is preferably selected for absorbing the load from e.g. a person in a vehicle seat and allow stretching of the heating wire. This smaller sinus shape is preferably preformed in an earlier stage. Another serpentine shape is of course conceivable. As can be gathered from Fig. 2, the wire is positioned practically in contact with the carrier 4.

Fig. 2 hereby illustrates a schematic cross-section through the carrier and thus cross-sections through some loop portions of the heating wire 1. At a station 21 for application of adhesive, shown in Fig. 2, the chemical bonding agent is applied, preferably in the form of a spray glue, through spraying of preferably the entire carrier surface, more specifically the topside 7 thereof, or at least those portions of the

carrier where the heating wire 1 extends. The spray glue 8 is supplied from a number of not shown nozzles above the carrier and the heating wire. Through the carrier 4 advantageously having certain absorbing properties, the spray glue will penetrate almost entirely into the carrier material, and thus will not form any strongly adhesive surface coating upon the carrier. On the other hand, an adhesive layer 9 or glue layer will be applied onto the heating wire 1, over its entire length on the carrier 4. The glue is of the thermo-glue type, whereby the glue in the nozzles and during application onto the heating wire is kept heated to a temperature above the glue melting temperature, entailing that the glue will be in liquid form or at least have adhesive properties. In practice, the glue outside of the nozzles will transform into filaments, settling like a "spun" surface across the heating wire 1 and the topside 7 of the carrier 4. Either the entire topside, or selected areas along the wire loop can be coated. The glue is applied in such a quantity that it will settle also in an area 10, 11 between the heating wire 1 and the carrier 4 on both sides of the wire, and will practically flow in under the wire. Hereby, the adhesive or glue will provide an attachment between the heating wire 1 and the carrier. As the carrier with the heating wire is subsequently conveyed to an area with a temperature below the melting point of the glue, in the case of thermo-glue, the glue will harden and form an efficient attachment of the heating wire 1 in its determined position or distribution relative to the carrier 4.

After a completed application and attachment of the heating wire to the carrier 4 in the manner described above, the carrier 4 may, at the final end of the machine, be wound up into a roll for further transportation e.g. to the subsequent intermediate user or end user. As an alternative, the carrier and heating wire could be cut transversally into predetermined units, e.g. into the rectangular shape indicated by a dot-dashed line in Fig. 1. The heating wire may thereby have such an extension as to run continuously across from one carrier unit to another for a rational production, and the wire would then be cut in the same step as the transversal cutting of the carrier 4. The web material would then either have the same width as the final width of the carrier, or two or more carriers might be arranged side by side, whereby longitudinal cutting would also be performed at a suitable stage. The carrier 4 is, however, according to the invention, only a temporary carrier or transportation carrier, intended for upholding the shape and location of the heating wire 1 and enable its

handling before being given its final location in an intermediate product or an end product.

Fig. 3 illustrates a later stage in the handling of the heating element according to the method of the invention. This stage may be a later stage in a continuous process in one and the same machine described above, but may also be a handling stage at an intermediate user's or an end user's. Common for the different cases is that the heating element is to be placed onto a substrate 13, defining some kind of a covering layer inside a vehicle, preferably in a vehicle passenger compartment. This substrate 13 could be a textile upholstery layer defining the upholstery of a vehicle seat. The upholstery layer may hereby for example be provided with the heating element already at an upholstery manufacturer, who will supply the upholstery layer equipped with a heating element. Alternatively, the heating element may be applied to the upholstery layer in connection with the production of a vehicle seat, to be described further below. With the term substrate is meant a base surface, not necessarily located below the heating element but just as well a side surface or a surface turned downwards, such as a ceiling.

The carrier thus functions as a temporary carrier for storage and transportation of the heating element and for application of the heating element onto the substrate. By substrates turned upwards, such as in Fig. 3, the carrier is positioned upside down in relation to the stage according to Fig. 2, the heating wire being located on the bottom side of the carrier. The carrier is either handled unit-wise, for example manually, by being positioned, with the heating wire 1 turned downwards, against the substrate 13, that is, the topside 14 thereof. The carrier with the heating wire is advantageously applied to the substrate 13 using a certain pressure, e.g. with weights. The adhesion of the heating wire 1 will take place by heating the heating wire 1 as well as the substrate 13 to a temperature above the melting temperature of the thermo-glue, entailing that the thermo-glue will melt so as to be activated into adhesion, affixing the heating wire to the substrate. The heating is obtained by the heating wire 1 already at this stage advantageously being connected to the feeder lines 2, 3, which in turn are connected to a connector means 23 (see Fig. 1). Via the connector means, the heating element is connected to an electric power source, causing an electric current to flow through the heating wire. Said current is of such

strength as to cause the heating described above. As illustrated schematically in Fig. 4, the heating and the melting of the glue entails, that the glue surface at the heating wire 1 is parted, reducing the adhesion of the carrier 4 to the wire. The melting of the glue thus entails that the carrier 4, after removal of the weights, can be lifted off, separating the heating wire 1 from the carrier and leaving it on the substrate. The current supply is then interrupted, e.g. through disconnecting the connector means 23 from the voltage source, whereupon the heating wire will cool down to a temperature below the melting temperature of the glue. This leads to the glue achieving full adhesive action against the topside 14 of the substrate 13.

It may be gathered from Fig. 4, that the glue on the envelope surface of the heating wire is substantially missing over that portion of its circumference where it is least needed, that is at the portion of the circumference directed away from the substrate 13. This may however be more or less evident. This entails that, at a stage after the described application stage, the transport carrier 4 can be removed, preferably starting from one edge 15 of the carrier, by lifting it off the wire and the substrate. The heating wire thereby remains on the substrate and the carrier can be removed completely, see Fig. 5. The glue will then be concentrated onto exactly those portions where it is to function as an adhesive, i.e. between the heating wire 1 and the substrate 13.

The manufacture of a vehicle seat with a heating element will now be described by way of an example, with reference to Fig. 6. The method according to the invention can be used by that type of vehicle seat manufacture where the filling or core forming the resilient comfort-providing carrier for the upholstery material is not formed before applying of the upholstery onto the finished core, but is formed by means of filling expanding cold foam, e.g. polyurethane foam, into a mould 16, to form the comfort-providing, resilient core 17.

The upholstery material 13 is initially placed into the mould 16 with its outside, made e.g. of a textile layer 18, turned towards the wall 19 of the mould. The upholstery material may, besides the textile material, comprise an internal layer 20 of e.g. polyurethane film, fixedly applied directly onto the fabric layer or onto an intermediate foam material. The upholstery material 13 is produced and finished in an earlier

stage, through for example flame lamination or gluing. The heating element according to the invention may, in a previous stage, e.g. by a supplier of upholstery material, be applied to the inside of the upholstery material, that is against its internal layer 20, or may be placed into the mould 16 against the upholstery material in a separate stage.

If the heating element has not been applied before, the transfer and adhesion of the heating element, i.e. the heating wire, is performed in the manner described above, the upholstery material thus defining the substrate 13. In the illustrated example, the layer 20 and the glue may be of the same material, e.g. polyamide, polyurethane, or similar. Hereby, the heating loop is affixed to the upholstery material 14.

The heating element is then completely oriented and affixed in relation to the upholstery material, whereupon the core 13 is created through filling of the cold foam 13, the foam then expanding in a fermentation process and entirely filling the interior of the mould and being connected to the inner layer 9 of the upholstery material, said layer also being of the same material as the foam material, i.e. polyurethane. The layer 9 furthermore prevents the expanding foam from penetrating into and through the upholstery material.

The vehicle seat in question or, more specifically, one part thereof, is thus substantially ready after cutting it clean and applying a backside layer, if any. It is not shown in the figure, but already in connection with its application, the heating element will be provided with the feeder lines, extending between the upholstery material and the core, as well as with said electrical connector means for connection to a not shown control unit for control of the power supplied from the vehicle voltage source.

The invention will not be limited to the embodiments described above and illustrated in the drawings, but can be varied within the scope of the appended claims. It will be understood that the heating wire is in close contact with the temporary carrier 4 as well as the upholstery and the core even if, for the sake of clarity, the various components are shown with intermediate distances. As mentioned above, the heating element can be fitted to other substrates in the vehicle, e.g. panels, roof, instrument

panel, etc. When fitting in vehicle seats, other methods than the one described for seats could be used.

CLAIMS

1. A method for production and application of heating elements for heating in vehicles, said heating element consisting of a heating wire (1) defining at least one electric heating loop extending, in its operating position, in a predetermined pattern, c h a r a c t e r i s e d b y the steps of:
- 5 positioning the heating wire (1) onto at least one side (7) of a temporary carrier (4),
- 10 applying an adhesive (8) over said carrier, at least over those areas where the heating wire is lying on the carrier, and over the heating wire, causing the heating wire to adhere to the surface of the carrier,
- 15 transporting the carrier (4) with the heating wire to a final substrate, which the heating element is to be in close contact with,
- pressing the heating wire against the substrate, heating the adhesive so as to make the wire adhere to the substrate, and
- 20 removing the carrier, so that the heating wire is released from the carrier and adheres to the substrate, to form the heating element for heating in the vehicle.
2. The method according to claim 1, c h a r a c t e r i s e d b y the adhesive being applied through spraying across the heating wire and the carrier surface on that side thereof where the heating wire (1) is located.
- 25 3. The method according to claim 2, c h a r a c t e r i s e d b y the carrier absorbing the adhesive (8) so that the carrier surface (7) will only obtain negligible adhesive ability.
- 30 4. The method according to claim 1 wherein the adhesive is a thermo-glue, c h a r a c t e r i s e d b y the thermo-glue being heated and maintained at a temperature above the melting point of the thermo-glue when the thermo-glue is

applied onto the heating wire (1) and the carrier (4) as well as when the wires have been applied onto the substrate (13).

5. The method according to claim 4, characterised by said
5 heating being obtained through the supply of electric current through the heating wire (1).

6. The method according to claim 5, characterised by the
supply of electric current being achieved through connecting the heating wire (1) to
10 an electric power source via one or more electrical connector means (31), intended for connection of the heating element to the vehicle voltage source when in the final operating position in the vehicle.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

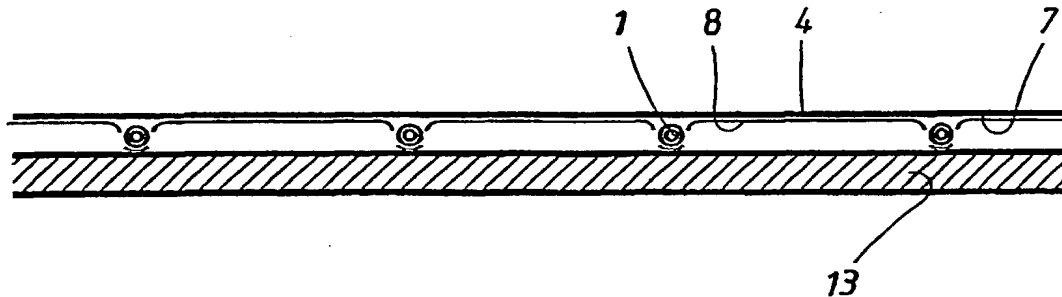


(43) International Publication Date
22 March 2001 (22.03.2001)

PCT

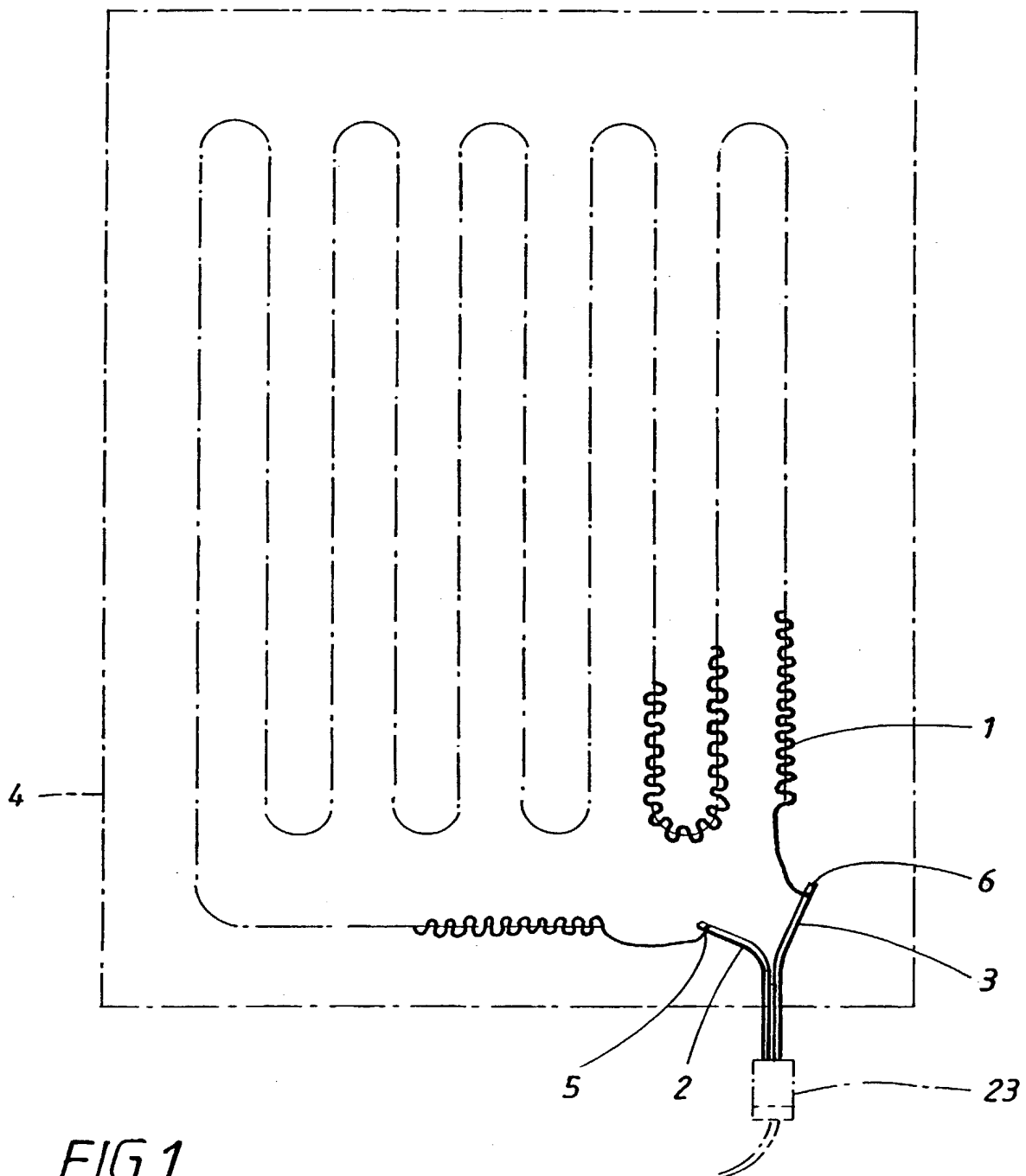
(10) International Publication Number
WO 01/19220 A1

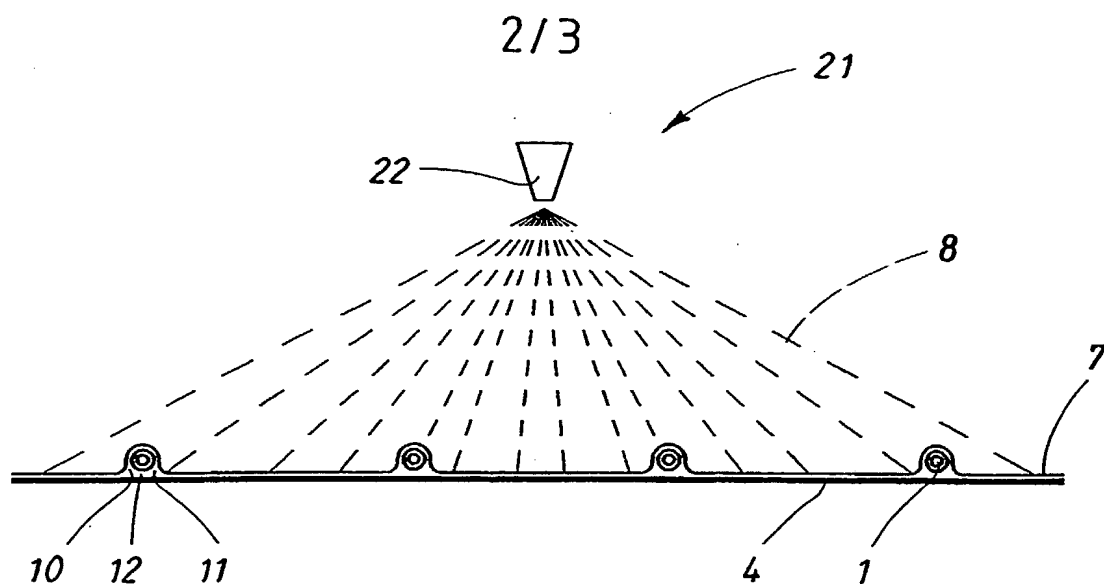
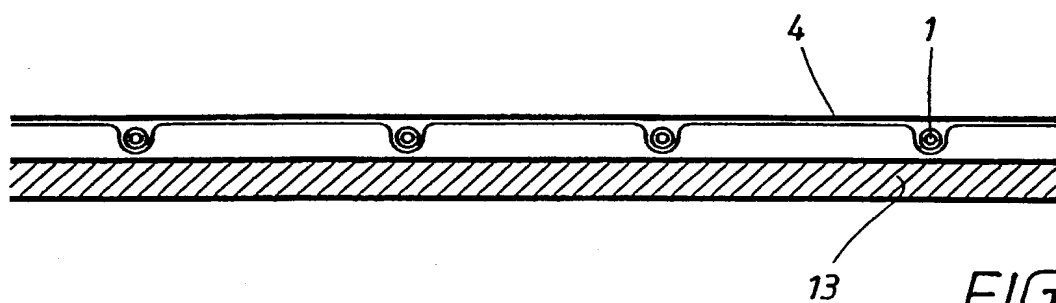
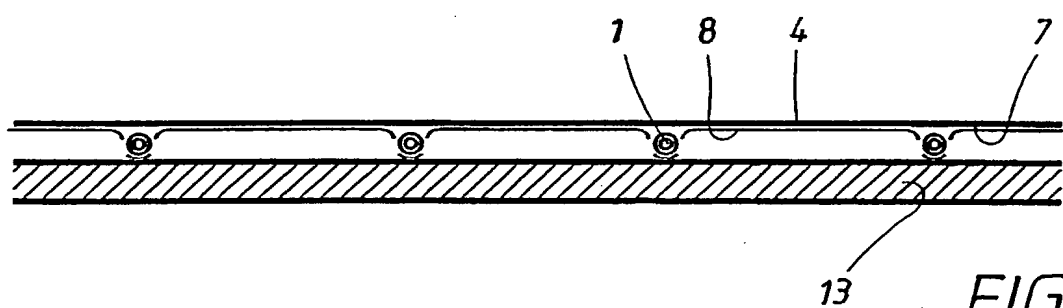
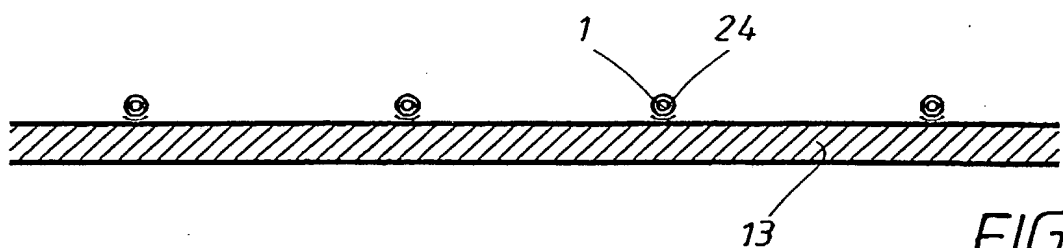
- (51) International Patent Classification⁷: A47C 7/74, B60N 2/44, H05B 3/34
- (21) International Application Number: PCT/SE00/01798
- (22) International Filing Date:
15 September 2000 (15.09.2000)
- (25) Filing Language: Swedish
- (26) Publication Language: English
- (30) Priority Data:
9903324-3 16 September 1999 (16.09.1999) SE
- (71) Applicant (for all designated States except US): KONGSBERG AUTOMOTIVE AB [SE/SE]; Box 504, S-565 28 Mullsjö (SE).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): ÖBERG, Peter [SE/SE]; Skolvägen 21, S-560 42 Sandhem (SE).
- (54) Title: METHOD FOR MANUFACTURING AND APPLICATION OF HEATING ELEMENT FOR HEATING IN A VEHICLE
- (74) Agents: ANDERSSON, Per et al.; Albihns Patentbyrå Göteborg AB, P.O. Box 142, S-401 22 Göteborg (SE).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— With international search report.
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.



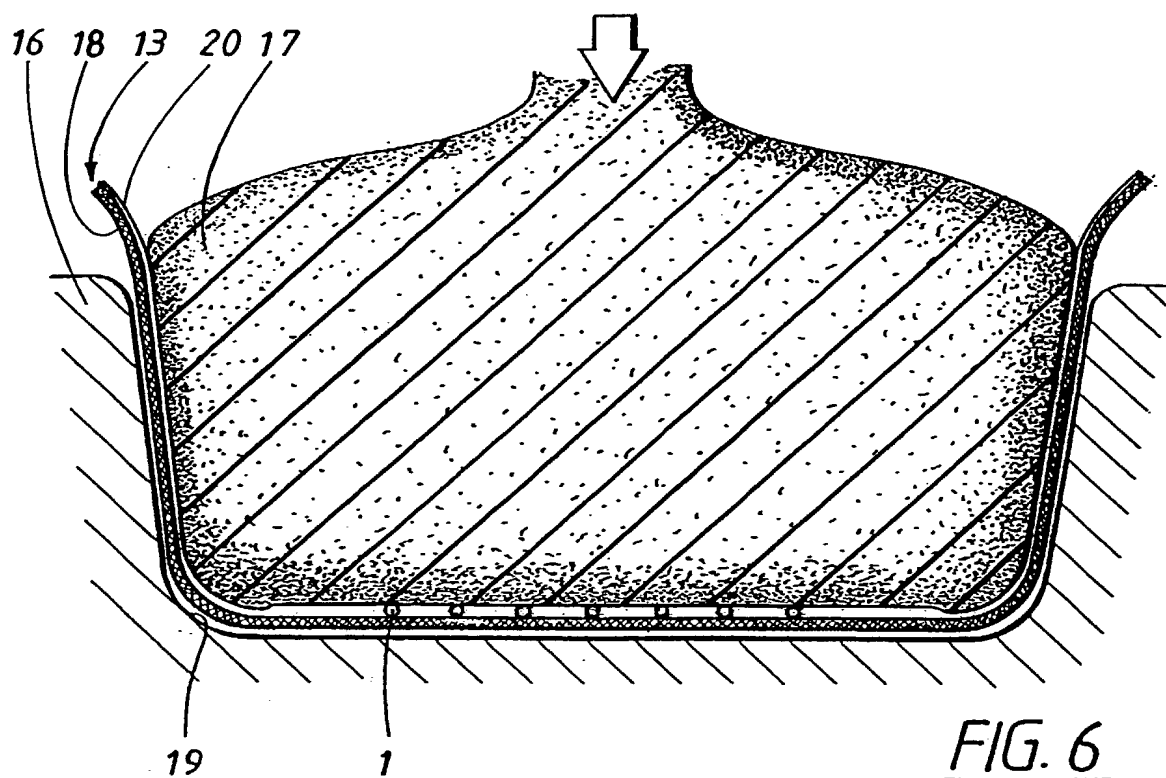
(57) Abstract: A method for production and application of heating elements for heating in vehicles is described. The heating element consists of a heating wire (1) defining at least one electric heating loop extending, in its operating position, in a predetermined pattern. The heating wire (1) is positioned onto one side (7) of a temporary carrier (4). An adhesive (8) is applied over said carrier, and over the heating wire, causing the heating wire to adhere to the surface of the carrier. The carrier with the heating wire is then transported to a final substrate (13), which the heating element is to be in close contact with. The heating wire is pressed against the substrate, and the adhesive is activated so as to make the wire adhere to the substrate. The carrier is removed, so that the heating wire is released from the carrier and adheres to the substrate, to form the heating element for heating in the vehicle.

1/3



FIG. 2FIG. 3FIG. 4FIG. 5

3/3



Please type a plus sign (+) inside this box



PTO/SB/01 (03-01)

Approved for use through 10/31/2002. OMB 0651-0032

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63) <input type="checkbox"/> Declaration Submitted with Initial Filing OR <input checked="" type="checkbox"/> Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)	Attorney Docket Number	ALBIHN-426
	First Named Inventor	Peter Öberg
	COMPLETE IF KNOWN	
	Application Number	Not Yet Assigned
	Filing Date	
	Group Art Unit	N/A
	Examiner Name	Not Yet Assigned

As a below named inventor, I hereby declare that:

My residence, mailing address, and citizenship are as stated below next to my name.

I believe I am the original and first inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled:

METHOD FOR MANUFACTURING AND APPLICATION OF HEATING ELEMENT FOR HEATING IN A VEHICLE

(Title of the Invention)

the specification of which

☐ is attached hereto

OR

☒ was filed on (MM/DD/YYYY) 09/15/2000 as United States Application Number or PCT International

Application No. PCT/SE00/01798 and was amended on (MM/DD/YYYY) (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 365 (a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?	
				YES	NO
9903324-3	SE	09/16/1999	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:

Please type a plus sign (+) inside this box



PTO/SB/01 (03-01)

Approved for use through 10/31/2002. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

DECLARATION — Utility or Design Patent Application

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following registered practitioner(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: Customer Number 000530

Direct all correspondence to:

Customer Number
or Bar Code Label

000530

OR ☐

Correspondence address below

Name

Address

City

State

ZIP

Country

Telephone

Fax

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

NAME OF SOLE OR FIRST INVENTOR:

A petition has been filed for this unsigned inventor

Given Name
(first and middle [if any])

Peter

Family Name
or Surname

Öberg

Inventor's
Signature

Sandhem

Date

Residence: City

State

Country

Sweden

Citizenship

Sweden

Mailing
Address:

Skolvägen 21

City
Sandhem

State

ZIP

S-560 42

Country

Sweden

NAME OF SECOND INVENTOR:

A petition has been filed for this unsigned inventor

Given Name
(first and middle [if any])Family Name
or SurnameInventor's
Signature

Date

Residence: City

State

Country

Citizenship

Mailing
Address:

City

State

ZIP

Country



Additional inventors are being named on the _____ supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto.

Please type a plus sign (+) inside this box  PTO/SB/01 (03-01)
Approved for use through 10/31/2002, OMB 0651-0032
U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)	<input type="checkbox"/> Declaration Submitted with Initial Filing		<input checked="" type="checkbox"/> Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)
	Attorney Docket Number		ALBITHNW 3.3-426
	First Named Inventor		Peter Öberg
	COMPLETE IF KNOWN		
	Application Number		
		Filing Date	
		Group Art Unit	
		Examiner Name	

As a below named inventor, I hereby declare that:

My residence, mailing address, and citizenship are as stated below next to my name.

I believe I am the original and first inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Method for manufacturing and application of heating
in a vehicle.

(Title of the Invention)

the specification of which

☐ is attached hereto

OR

☒ was filed on (MM/DD/YYYY) 09/15/2000 as United States Application Number or PCT International

Application No. PCT/SE00/01798 and was amended on (MM/DD/YYYY) (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 385(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 365 (a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?	
				YES	NO
9903324-3	Sweden	09/16/1999	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:


Please type a plus sign (+) inside this box



PTO/SB/01 (03-01)
Approved for use through 10/31/2002. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

DECLARATION — Utility or Design Patent Application

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following registered practitioner(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: Customer Number 000530

Direct all correspondence to:		<input checked="" type="checkbox"/> Customer Number or Bar Code Label		<input type="checkbox"/> Correspondence address below
Name				
Address				
City		State	ZIP	
Country	Telephone		Fax	
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.				
NAME OF SOLE OR FIRST INVENTOR:			<input type="checkbox"/> A petition has been filed for this unsigned inventor	
Given Name (first and middle (if any))		Family Name or Surname		Date
1-00 Peter		Oberg		December 10, 2002
Inventor's Signature		SEX		
Residence: City		State	Country	Citizenship
Sandhem			Sweden	Sweden
Mailing Address:	Skolvägen 21			
City	State	ZIP	Country	
Sandhem		S-560 42	Sweden	
NAME OF SECOND INVENTOR:			<input type="checkbox"/> A petition has been filed for this unsigned inventor	
Given Name (first and middle (if any))		Family Name or Surname		Date
Inventor's Signature				
Residence: City		State	Country	Citizenship
Mailing Address:				
City	State	ZIP	Country	
<input checked="" type="checkbox"/> Additional inventors are being named on the 1 supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto.				